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EXAMINER

PADGETT, MARIANNE L

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 04/28/2003

13

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/857831

Applicant(s)

Bär et al

Examiner

M.L. Padgett

Group Art Unit

1762

— The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- ☒ Responsive to communication(s) filed on 10/5/01 & 6/7/01
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1-14 is/are pending in the application.
- Of the above claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-14 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
- ☐ All ☐ Some* ☐ None of the:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s) 6
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other _____

Office Action Summary

1. Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claims 1-10, 12 and 14 recite the broad recitations, and the claims also recites "in particular ..."; "or more specifically ..." or "such as" which is the narrower statement of the range/limitation.

Use of multiple ranges for limitations is vague and indefinite, as employed in claim 1, lines 3-4 "a plurality of regions, in particular fibers ... in particular for drying lacquered wood" (also note non-U.S. English spelling of fibers, emphasis added); claim 1, lines 7-8 "...in particular water"; claim 2, lines 2-3 "...", in particular lacquered wood" and lines 5-6 "..., in particular coloring pigments" (where it is unclear if "the properties

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..." goes necessarily with the claimed component or pigments); claim 2, line 16 "...", in particular a secondary lacquering"; claim 3, line 4 "near infrared, in particular at wavelengths below $1.0\mu\text{m}$ "; and like phasing ("in particular") in claim 4, line 4; claim 5, lines 4-5; claim 6, line 3; claim 10, lines 4-5; claim 12, line 5 and claim 14, line 2; or in claim 7, lines 7-8 "the object (1,5) or more specifically its ... longitudinal sections" appears to be different ranges of what is conveyed into the drying zone, with claim 8, lines 2-3 also using this phasing; and claim 9, last 4 lines "... components ..., such as reflectors ..."

The claims are inconsistent as to whether a single object or plural objects are being treated, hence either option will be considered to read on the claim for purposes of further examination.

The claims are also replete with the use of pronouns, such as their, its or it, instead of using proper patent terminology that clearly indicates what limitation is under discussion, and its antecedent basis. Use of such pronouns is not necessarily improper, such as in claim 1, lines 12, where "their" clearly refers to "structured regions", but pronouns and their possessives are vague and indefinite if they could refer to more than a single limitation, such as in claim 2, line 7 where "its" could refer to pigments or component or impregnation agent or coating agent. Further on in claim 2, in lines 10 and 13 "it" is similarly unclearly defined. In claim 7, line 6 "its coated or impregnated longitudinal sections" is problematical, because no such section have been introduced. While some such sections might be presumed to be on the object, the object has had no shape defined, so need not have any parts or sections that can be described as

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longitudinal. Line 3 describes a direction of conveyance as longitudinal, but that requires no particular shape in the object. Also see "its" in claim 8, which is like claim 7; "it" in claim 9, line 6 which may refer to "reservoir" or more probably "coating agent" or "the impregnation" or "gas", while "it" in line 8 could refer to either stream or gas. The "its" in claim 14, line 11 appears to refer to "the transport mechanism, so is clear.

Use of relative terms that lack clear metes and bounds in the claim, is vague and indefinite, unless a definition in the specification or in relevant cited prior art provides such metes and bounds. In claim 1, see "uniformly" and in claim 2 "the quality" (defined how?)

Note in claim 1, lines 5-6 "coating agent" and "impregnation agent" were both introduced as individual limitations, hence for clarity, i.e., consistency the clearest format is to use that same nomenclature throughout the claims, not change to a composite noun which can cause confusion as to what adjectives etc, go with what noun(s).

In claim 2, line 7 "the regions" lacks any antecedent basis, as none have been defined (although they were used in the previous independent claim).

In claim 13, "groove-like structure" is vague and indefinite, as it is unclear how the structure is "like" a groove, but is not a groove.

It is also noted, that while use of reference numbers in the claims, is not formally incorrect, they can cause confusion about what if anything the figure that they refer to adds to the claim limitation, so "modified".

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2. Applicants citation of the German patent 2029657 is noted, but not readable at this time. The translation of the PCT 409 has discussion that sounds relevant to the claims as presently written, so a translation has been ordered.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-5, 7-8 and 10-11 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hirabayashi et al.

Claims 6 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirabayashi et al.

Hirabayashi et al cast coat paper with a wet coating layer, then heat to form a gel state or dry and rewet, where their improvement over the prior art is to use near-infrared radiation having wavelengths of 0.75 to 2.0 μm . Notice is taken that paper is a fibrous material, that if left wet to long has a property or characteristic of deforming, warping or being distorted in shape, and that any such individual material will inherently have a

"characteristic period" in which such takes place that is dependant on both the material and the distribution and degree of wetting. For example, it is common knowledge that if one spills water on paper products, but cleans it up quick enough, one can avoid water damage, but if left to dry on its own damage will generally occure.

Hirabayashi et al disclose that other heating means, including other IR, such, as intermediate IR have been used in the past, but do not produce as uniform end results in the coating, however also do not indicate warping or gross distortion of the paper when using these other techniques or in the comparative example with the halogen lamp. Hirabayashi et al discloses a high speed technique, with examples 1-2 (and comparison 1-4) at 65 m/min (i.e., about 1 m/sec) and Ex. 3 (comparison Ex.5) at 55 m/min (i.e., about 0.9 m/sec), and given that their drying technique is fast enough that the final product and process is descried by "whereby many defects such as the above-mentioned pinhole-like dots, gloss irregularities, uneven contact between the wet coated layer and the heated drum and like defects as may occur in these previous casting methods are prevented from occurring" (col. 2, lines 36-48), it is inherent that the Hirabayashi et al near-IR drying technique is sufficiently fast to prevent distortion of the paper from occurring. Alternatively, as warped paper would not be able to make the even contact taught to be effected by the reference, it would have been obvious to one of ordinary skill to practice the invention of the reference with a drying speed that precludes such distortion. It is further noted, that while Hirabayashi et al do not discuss the drying time between wetting through completion of near-IR drying, that given the exemplary speed (1 m/s or 0.9 m/s) and the configuration of Fig. 1 apparatus, with the

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air-knife coater 2 and near IR radiation unit 3 immediately next to each other, and their relative sizes, that it would have been obvious to one of ordinary skill in the art that for reasonable size IR drying units (i.e., smaller than 3 or 5 meters long), that drying times would have been well within claimed time limits.

In Hirabayashi et al, particularly see the abstract, examples and claim 1 for wavelength ranges, use of a light source filament with temperatures from 1600 K to 3800K to emit 1.8 μm to 0.75 μm peak values, and use of halogen lamp at 0.7 μm as a comparison. The cast coatings being deposited include pigments and components as in applicant's claim 2, and paper certainly has the characteristic described therein. The configuration shown by Fig. 1 or 2, shows movement in a longitudinal direction consistent with the claims 7-9, such that drying of claimed longitudinal sections may be considered read on. Note that Ex. 1-2 and Fig. 1 use an "air-knife" for coating, so inherently use a stream of gas in doing so, but the structure and previous path of that gas and its stream are not discussed.

Hirabayashi do not discuss or explicitly illustrate the structure of the lamps used in the disclosure, however the units therefore, are shown as elongated, and glass tubes are conventional for lamp enclosures, where the type of glass is chosen to permit desired wavelength(s) of light to pass, hence it would have been obvious to one of ordinary skill in the art to employ lamps to fit the shape of the radiation units illustrated in Figs. 1-2, and use convention, lamps to do so. Note discussion of the W-filament lamp used in Ex. 1-2 in col. 6, line 55-68 mentions the use of reflectors with the light source.

5. Beer is cited as of interest for using IR tuned to the frequency to evaporate H₂O (abstract), where he notes water wetting a substrate of paper or board stock will inevitably result in stock distortion when overwetting occurs (col. 2, line 63- col. 3, lines 5), thus supporting the above notice of such effects on paper.

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirabayashi et al as applied to claims 1-8 and 10-14 above, and further in view of Kimble and Josefsson et al.

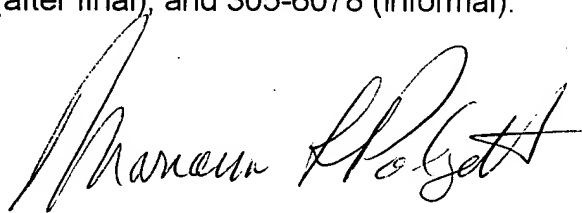
Hirabayashi et al are silent concerning cooling of the near IR lamps, however as can be seen from Josefsson et al that short wave infrared lamps (0.8-2.0 μ m, equivalent to near IR) and medium wave, are susceptible to over heating, and it is known to use air flow to cool these lamps when they are used for heating and drying processes, as demonstrated by Josefsson et al, in order to prolong the life time of the lamps (abstract; fig. 3; col. 2, lines 5-15 and col. 3, lines 62-col. 4, line 40). Therefore, it would have been obvious to one of ordinary skill in the art to cool the lamps of Hirabayashi et al using airflow, in order to prolong their useful lifetime, as taught by Josefsson et al. Furthermore, as seen by Kimble, wet coating and subsequent drying processes are known to combine airflow past IR heat sources with airflows blown onto the substrate being treated, where the flow for the air knives, passes thru the IR source (Abstract; Fig 1-2; col. 1, line 40-col.2, line 11; col. 3, line 38-col. 4, line 66) and cause complete drying. Hence, it would have been further obvious to one of ordinary skill in the art to supply the air for Hirabayashi et al's air knives, via air that was used to cool their IR units, as cooling of the IR radiators has been seen to be beneficial, and use of the

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heated air therefrom for temperature control of the air knife, provides an economical use of resources as shown by Kimble, i.e., only one set of blowers for air flow is required, and no extra energy for maintaining coating supply temperature when required. (Note if lacquered wood is ever necessarily claimed, Kimble will apply thereto.

7. Other art of interest, include Nelson et al, that has teachings substantially similar to those of Josefsson et al; the patent to Bär et al (overlapping inventors with present case) also has lamp cooling teachings; and the patents to Contanza et al and Brose et al, are of interest for IR curing and/or drying operations that may be applied equivalently of either wood or paper products, where pigmented coating substantially similar to those of Hirabayashi et al are employed. Wessling et al teach further coating, then drying operation, where IR may be used, and the substrate may be wood (claim 1, 9 and 15, plus col. 8), while Carlson et al, dries varnish coated paper board via IR heaters, and Rye et al dries via IR burners various fiber materials.

8. Any inquiry concerning this communication should be directed to M L. Padgett at telephone number 703-308-2336 on M-F from about 8:30 am - 4:30 pm; FAX# (703) 872-9310 (regular); 872-9311 (after final); and 305-6078 (informal).



M. L. Padgett/mn 4/16/03
April 24, 2003

**MARIANNE PADGETT
PRIMARY EXAMINER**

P.S. An equivalent to GE 2,029,657 has been received from the PTO translation branch, thus British patent 1,309,626, has been included for applicant's convenience, but has not yet been reviewed by the Examiner. 4/23/03.